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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/925,941	08/09/2001	John R. Stuelpnagel	A-67616-4/RMS/DCF/SRN	6890

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EXAMINER

FORMAN, BETTY J

ART UNIT	PAPER NUMBER
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1634

DATE MAILED: 12/07/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/925,941	STUELPNAGEL ET AL.	
	Examiner	Art Unit	
	BJ Forman	1634	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 September 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4 and 6-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4 and 6-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

Status of the Claims

This action is in response to papers filed 23 September 2004 in which claims 1-4 and 7-12 were amended. The amendments have been thoroughly reviewed and entered.

The previous rejection in the Office Action dated 12 July 2004 under 35 U.S.C. 112, first paragraph is withdrawn in view of Applicant's comments on pages 7-8 of the response. second paragraph are withdrawn in view of the amendments. The previous rejection under 35 U.S.C. 112, second paragraph is withdrawn in view of the amendments. The previous rejections under 35 U.S.C. 102(e)/103 and 35 U.S.C. 103(a) are withdrawn in view of new grounds for rejection. The previous rejection under obviousness-type double patenting is maintained.

Applicant's arguments have been thoroughly reviewed but are deemed moot in view of the new ground for rejection. New grounds for rejection are discussed.

Claims 1-4 and 6-12 are under prosecution.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 11 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 11, step b) is indefinite for the recitation "said first and second discrete sites" because the recitation lacks proper antecedent basis in the claim.

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Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 11-12 are rejected under 35 U.S.C. 102(e) as being anticipated by Chen et al (U.S. Patent No. 6,24,517, priority date of 60/102,365, 29 September 1998).

Regarding Claim 11, Chen et al disclose a method of signal preprocessing comprising acquiring reference signals from subpopulations at discrete sites on an array by detecting signals in channels (red and green) determining a threshold measure by determining a difference between the reference and threshold signal for each population, acquiring a second signal for each of a plurality of discrete sites and determining if the signal is within a threshold measure for the respective subpopulation (spot intensity calibration, Column 5, line 8-Column 6, line 59; spot density calibration Column 6, line 60-Column 9, line 58; and comparison of uncalibrated spots; Column 9, line 58-Column 11, line 63 and Fig. 8).

Regarding Claim 12, Chen et al disclose a method of signal preprocessing comprising deriving reference signals from discrete sites in two channels (red and green) determining a threshold measure by determining a difference between the reference and threshold signal for each population (null hypothesis) and comparing first and second signals (Column 9, line 58-Column 11, line 63 and Fig. 8).

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6. Claims 11-12 are rejected under 35 U.S.C. 102(e) as being anticipated by Bengtsson (U.S. Patent No. 6,078,390, filed 4 May 1998).

Regarding Claim 11, Bengtsson discloses a method of signal preprocessing (array calibration) comprising acquiring reference signals from subpopulations at discrete sites on an array by detecting signals in channels (red and green) determining a threshold measure by determining a difference between the reference and threshold signal for each population, acquiring a second signal for each of a plurality of discrete sites and determining if the signal is within a threshold measure for the respective subpopulation (Column 6, line 1-Column 7, line 43 and Claims 1-2, 14-15 and 25-26).

Regarding Claim 12, Bengtsson discloses a method of signal preprocessing comprising deriving reference signals from discrete sites in two channels (red and green) determining a threshold measure by determining a difference between the reference and threshold signal for each population (N) and comparing first and second signals (Column 6, line 1-Column 7, line 43 and Claims 1-2, 14-15 and 25-26).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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8. Claims 1-4, 13-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Walt et al (U.S. Patent No. 6,327,410 B1, filed 11 September 1998) in view of Fiekowsky et al (U.S. Patent No. 6,090,555, filed 23 December 1997).

Regarding Claim 1, Walt et al disclose a method of determining the presence of a target analyte in a sample comprising acquiring a first data image (i.e. optical signature) of a random array composition comprising a substrate with a surface comprising discrete sites and a population of microspheres comprising at least a first and a second subpopulation each comprising a bioactive agent wherein said microspheres are distributed on said surface such that each of said discrete sites contain no more than one microsphere (Column 3, lines 35-45; Column 5, line 61-Column 6, line 29; and Fig. 5 & 7) mapping a grid (i.e. matrices) onto said first image to create a registered first image (i.e. optical signature) contacting said random array with a sample, acquiring a second data image from said array with said sample, mapping a grid (matrices) onto said second data image to create a registered second data image and comparing first and second registered data image to determine the presence or absence of said target analyte (Column 18, line 59-Column 19, line 53; Column 27, lines 30-50; and Fig. 10).

Walt et al further teach the array is decoded using a computer (Column 16, lines 11-15) wherein the computer is used for data analysis (Column 22, lines 8-13) but they do not specifically teach their obtained images are stored in a computer readable memory. However, data image storage, comparison and analysis for target analyte determination was well known in the art at the time the claimed invention was made as taught by Fiekowsky et al (Column 5, lines 18-22 and Fig. 3). Fiekowsky et al further teach the claimed method of grid mapping comprising positioning an image on the grid and repositioning the grid or image to align the grid with the image (Column 7, lines 8-Column 8, line 12) whereby their computerized alignment greatly improves accuracy of image alignment and subsequent analysis (Column 9, line 55-Column 10, line 5).

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It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to apply the grid mapping and data storage of Fiekowsky to the image analysis of Walt based on the greatly improved accuracy of image alignment and subsequent analysis as taught by Fiekowsky (Column 9, line 55-Column 10, line 5).

Regarding Claim 2, Walt et al disclose the method wherein said discrete sites are wells (Column 6, lines 22-29).

Regarding Claim 3, Walt et al disclose the method wherein said bioactive agents are proteins (Column 8, lines 50-59).

Regarding Claim 4, Walt et al disclose the method wherein said bioactive agents are nucleic acids (Column 9, lines 41-50).

Regarding Claim 13, Fiekowsky teaches the method wherein the alignment comprises edge alignment (Column 10, lines 14-32 and Fig. 14).

Regarding Claim 14, Walt et al teach the method wherein microsphere images are related to the grid (Column 19, lines 31-53) and Fiekowsky teach the method wherein substrate positions are aligned resulting in greatly improved analysis (Column 9, line 55-Column 10, line 32 and Fig. 14).

9. Claims 6-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Walt et al (U.S. Patent No. 6,327,410 B1, filed 11 September 1998) in view of Chen et al (U.S. Patent No. 6,24,517, priority date of 60/102,365, 29 September 1998).

Regarding Claims 6-10, Walt et al disclose a signal preprocessing comprising acquiring a first data image (i.e. optical signature) of a random array composition comprising a substrate with a surface comprising discrete sites and a population of microspheres comprising at least a first and a second subpopulation each comprising a bioactive agent wherein said microspheres

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are distributed on said surface such that each of said discrete sites contain microspheres (Column 3, lines 35-45; Column 5, line 61-Column 6, line 29; and Fig. 5 & 7) determining the similarity of a first signal from at least one discrete site to at least one reference signal wherein when said first signal is similar to at least one of said reference signals, said discrete site contains a bead (Column 19, lines 31-53).

Walt et al further teach the discrete sites are ends of optical fibers whereby signals are detected through the optical fiber i.e. channel (Column 16, lines 21-65 and Fig. 4) wherein a signal from a first microsphere is measured through a first fiber and a signal from a second microsphere is measured through a second fiber (Column 16, lines 58-65).

Walt et al compare a first signal and second signal to determine bead presence (Column 19, lines 46-53), which clearly suggests that they compare the signal to a threshold signal (e.g. signal/no-signal) to determine presence of the bead.

Furthermore, Chen et al disclose a method of signal preprocessing comprising acquiring reference signals from subpopulations at discrete sites on an array by detecting signals in channels (red and green) determining a threshold measure by determining a difference between the reference and threshold signal for each population, acquiring a second signal for each of a plurality of discrete sites and determining if the signal is within a threshold measure for the respective subpopulation (spot intensity calibration, Column 5, line 8-Column 6, line 59; spot density calibration Column 6, line 60-Column 9, line 58; and comparison of uncalibrated spots; Column 9, line 58-Column 11, line 63 and Fig. 8) wherein no-bleed through occurs i.e. noise is mitigated (Column 5, lines 29-31).

It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to apply the signal comparison and analysis of Chen et al to the method of Walt et al. The motivation to do so comes from Chen wherein they teach their analysis quantifies differences and the significance of the differences in hybridization signal (Abstract).

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Double Patenting

10. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

11. Claims 1-4 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 49, 53 and 54 of copending Application No. 09/636,387 in view of Walt et al (U.S. Patent No. 6,327,410). Although the conflicting claims are not identical, they are not patentably distinct from each other because both sets of claims are drawn to a method of determining the presence of a target analyte comprising acquiring a data image and differ only in the instant claims are drawn to mapping a grid onto the data image to create a registered data image. However, grid mapping (i.e. matrices) to provide a registered data image (optical signature) was well known in the art at the time the claimed invention was made as taught by Walt et al who teach that matrices-forming optical signatures facilitate comparison of optical signature and analyte detection (Column 19, lines 31-52). Therefore, it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the '387 method by mapping a grid onto the data image to create the registered data image for the expected benefit of facilitating analyte detection as suggested by Walt et al (Column 19, lines 47-53).

12. This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

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Response to Comments

13. Applicant's intention to file a Terminal Disclaimer upon indication of allowable subject matter is acknowledged.

Conclusion

14. No claim is allowed.


15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to BJ Forman whose telephone number is (571) 272-0741. The examiner can normally be reached on 6:00 TO 3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gary Jones can be reached on (571) 272-0745. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to (571) 272-0547.

Patent applicants with problems or questions regarding electronic images that can be viewed in the Patent Application Information Retrieval system (PAIR) can now contact the USPTO's Patent Electronic Business Center (Patent EBC) for assistance. Representatives are available to answer your questions daily from 6 am to midnight (EST). The toll free number is (866) 217-9197. When calling please have your application serial or patent number, the type of document you are having an image problem with, the number of pages and the specific nature of the problem. The Patent Electronic Business Center will notify applicants of the resolution of the problem within 5-7 business days. Applicants can also check PAIR to confirm that the problem has been corrected. The USPTO's Patent Electronic Business Center is a complete service center supporting all patent business on the Internet. The USPTO's PAIR system provides Internet-based access to patent application status and history information. It also enables applicants to view the scanned images of their own application file folder(s) as well as general patent information available to the public.

For all other customer support, please call the USPTO Call Center (UCC) at 800-786-9199.


BJ Forman, Ph.D.
Primary Examiner
Art Unit: 1634
December 2, 2004